

BINOCULARS MADE IN HOLLAND: BLEEKER

DR. CAROLINE (LILI) EMILIE BLEEKER (1897-1985)

BRILLIANT SCIENTIST

***DUTCH PIONEER DESIGNER AND PRODUCER OF OPTICAL INSTRUMENTS
INITIATOR AND DIRECTOR OF THE FIRST DUTCH OPTICAL FACTORY NEDOPTIFA
(1930-1978).***

A short history

by

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The “*Nederlandse OPTiek en InstrumentenFabriek (NEDOPTIFA) Dr. C.E. Bleeker*” is often mentioned as NEDOPTIFA, but more frequently the company is indicated as BLEEKER, named after the founder of the company Dr. C.E. Bleeker. Caroline (Lili) Emilie Bleeker was born in the Dutch city of Middelburg in 1897 as the fifth and youngest child of Lutheran pastor J.L. Bleeker and his wife G.M. Döhne. Being a girl she was destined to become a help in the house as a support for her mother. However, Lili Bleeker insisted that she wanted to study. She went to secondary school in Middelburg, the city where in 1608 the first binoculars in history were made by spectacle maker Hans Lipperhey.

In 1916 Lili Bleeker was enrolled as a student in mathematics and physics at the State University of Utrecht. After finishing this study successfully, she became a PhD student at the Physics Laboratory of Utrecht University. On November 5, 1928 she received her doctors degree cum laude with a PhD thesis “*Measurements of emission and dispersion in the series spectra of alkali metals*”.

A year and a half later, in June 1930, she started a physical consultancy in combination with a small workshop. The company activities took place from her living room and from some garage boxes. In March 1933 the activities of her company had grown to such an extent that she could move to a small factory building in the centre of the city of Utrecht. In November 1935 former fellow student in physics Gerard Willemse joined the company as co-director and partner in life. They lived together as man and wife until their death without ever getting married, which was quite unusual in that time. Up to 1936 the company mainly produced laboratory hardware and precision electric measuring instruments. In March, 1936 Lili Bleeker decided to start an optical workshop and exactly one year later in March 1937 the production of optical products and optical instruments started. Investment money for the new optical workshop was supplied by a number of private parties. Among them was Prof. Frits Zernike (a life long friend of Dr. Bleeker) from Groningen University, who was in need of top quality optics for his research. At that time The Netherlands did not have an optical industry apart from Zeiss-Nedinsco in Venlo, which was in fact a company directed by Zeiss-Germany. (Prof. Zernike received in 1953 the Nobel prize for Physics for his invention of phase-contrast microscopy).

In 1938-1939 Lili Bleeker started negotiations with the Dutch Government about the production of binoculars for the Dutch military. With that goal in mind she had already started the production of a series of ultra light 6x24 Porro prism binoculars with excellent optical quality. The binoculars entered the market in February of 1939. At the end of 1939 she presented one of these binoculars to prime-minister Colijn of The Netherlands, so he could judge for himself about the quality of it. The “Bleeker” company had grown from 16 employees on February 1937 to 50 employees on May 1, 1940.

However, on May 10, 1940 The Netherlands became involved in World War 2 by the sudden and unexpected attack of the German Army. On May 14, 1940 Lili Bleeker stopped the production of binoculars, since she did not want to make optical instruments for the German army. In 1940-1941 a lot of new microscope optics was designed on request of Dutch universities which were desperately in need of high quality microscopes and in 1943 BLEEKER started the production of complete microscopes. Microscope production would grow over the years into a large

microscope programme with a great variety in microscopes e.g. different types of research microscopes, workshop microscopes, student microscopes etc.

The war years 1940-1945 became increasingly difficult for the company. The number of sales dropped drastically and as a consequence Dr. Bleeker had to fire a number of her employees, but the Dutch authorities did not give permission to do so. As a consequence she had to pay her employees from her personal money. The year 1944 brought a lot of hardship. Lili's sister died in February 1944, in September 1944 Gerard Willemse's father was murdered by the German occupants because he had printed flyers for the Dutch resistance and in that same month somebody had informed the Nazis that Dr. Bleeker was hiding Jewish citizens in the factory building. German army troops visited the factory to investigate the matter. Dr. Bleeker was never impressed by authorities so she addressed the German officer in his own language and succeeded to mislead them. The Jewish persons in hiding could escape without being discovered due to the complicated structure of the old factory building. However, Dr. Bleeker and her companion Gerard Willemse had to go in hiding. In the weeks thereafter the factory was looted by the Germans and by Dutch collaborators, so a lot of work had to be done after the ending of WW2 on May 5, 1945 to get the factory going again. On top of that there was a very limited supply of good quality materials for the production of optical and other precision instruments.

Immediately in 1945 Dr. Bleeker and Drs. Willemse started to make plans to have a new factory building in the city of Zeist. Realisation of these plans was not easy, since a lot of money was required and the Dutch Government did not pay a penny to overcome the war damages. However, the government did give Dr. Bleeker a Royal Distinction (Officier in de Orde van Oranje Nassau) on September 13, 1946 for her bravery during the war.

Already in 1946 the production of microscopes was re-started and a new 7x50 Porro prism binocular was designed for the Dutch navy. It took until 1948 before the first microscopes were sold. In that same year the new factory building in Zeist was completed and NEDOPTIFA also became a Naamloze Vennootschap (public limited company). On November 18, 1949 Mr. dr. J. In 't Veld, minister of Economic Affairs of the Dutch Government, officially opened the new NEDOPTIFA factory building in Zeist, which employed at that time 150 persons.

On March 16, 1951 BLEEKER presented its first phase contrast microscope and on August 14, 1952 Bleeker, Zernike and Leitz signed an agreement about the exploitation of a joint Bleeker-Zernike patent in this matter.

On March 19, 1953 the company celebrated the production of the first thousand 7x50 binoculars. In that same year Prof. Frits Zernike received the Nobel Prize of Physics for his invention of the phase contrast microscope. On behalf of the company Dr. Bleeker gave Prof. Zernike a BLEEKER phase contrast microscope as a company present, which was specially made for that occasion. The photograph made at that occasion, which shows Dr. Bleeker and Prof. Zernike with that microscope was published in many Dutch newspapers.

After 1948 also a new 6x30 Porro prism binocular was designed and produced. Many were sold to the Dutch military. Mr. Van Holland, who was for many years in charge of the MEOB (Marine Optisch en Electronisch Bedrijf), the facility of the Dutch Navy, responsible for the purchase, quality control and repairs of the optical and opto-electronic equipment of the Dutch Navy, expressed to the author his very high regard for the optical quality of the BLEEKER binoculars. Mr. Van Holland considered the optics of the BLEEKER binoculars as having the highest quality of the different binoculars the Navy had in that time. Unfortunately, after WW-2, high quality metals for the binocular body parts were very difficult to obtain, so many of the binoculars produced in that time suffered from oxidation of metal body parts. The BLEEKER 7x50 binoculars also had to deal with that problem as did the Hensoldt Diagon 7x50, which was produced in the same time period.

Apart from the binocular programme BLEEKER also produced astronomical optics like a number of different astronomical eyepieces and large objective lenses for refractive astronomical telescopes. Because of its high optical quality BLEEKER also made optical instruments, which left the company with other names engraved on it, like for example Bausch and Lomb. Apart

from its binocular and extensive microscopy programme BLEEKER also had a high reputation for its refractometers.

In the time period 1950-1960 BLEEKER was confronted with a lot of financial worries, which found its origin in the debts due to the damages from WW-2 in combination with the investments needed for the new factory building. BLEEKER investigated the options to merge with another company to overcome these difficulties. As possible partners were approached Beckmann, Philips and Old Delft. That did not work out, so BLEEKER continued on its own. On June 2, 1961 Queen Juliana of The Netherlands rendered an official visit to the BLEEKER factory in Zeist. The photographs made at that occasion show an impressive production program both in the field of optics as well as in the field of precision electric measuring equipment. The Queen received a 7x50 Bleeker binocular with royal engravings as a gift of the company.

On December 31, 1963 Dr. Bleeker and Drs. Willemse retired as directors of NEDOPTIFA. Dr. Bleeker was at that time 66 years old. Five years later in 1968 NEDOPTIFA-BLEEKER was bought by Old Delft, later known as Delft Instruments, a company, which still exists.

In 1978 the BLEEKER-Old Delft factory in Zeist was closed down. That meant in fact the end of the BLEEKER company, although a small part of the BLEEKER optics production was continued until 1998 by the company RODEM in De Bilt, a village near the city of Utrecht.

Just for the fun of it I tried to get an impression of the performance of the Bleeker binoculars compared with binoculars of some binocular contemporaries. To do so I measured the transmission spectra of these binoculars, but one must keep in mind that in non-coated optics one or two more lenses in a binocular can make quite a difference in transmission. In principle the transmission data can supply information about the transmission quality of the optical glass used and how well the optics is corrected against light losses due to reflections.

Binocular type	Light transmission at 500 nm (night vision)	Light transmission at 550 nm (day light vision)
Bleeker 6x24 (1939)	49%	51%
Kern 6x24 (1934)	50%	54%
Bleeker 6x30 (1955)	74%	79%
O.I.P. 6x30 (1960)	61%	65%
Bleeker 7x50 (1955)	58%	65%
Hensoldt Diagon 7x50 (62%	67%

(N.B. *O.I.P.* stands for “*Optique et Instruments de Précision*”, a Belgian company founded in 1919 in Ghent. The company made optical and fine mechanical instruments also for the military. In 1988 it joined the holding of Delft Instruments and it moved to Oudenaarde in Belgium. At present its trade name is *OIP Sensor systems*).

On November 8, 1985 Dr. Caroline Emilie Bleeker died. She was buried on the Algemene Begraafplaats (= General Cemetary) of the City of Zeist. Her name was not mentioned on the tombstone on her grave, the grave in which Drs. Willemse, her life-long companion, had been buried in 1980. This error was corrected upon publication in 1997 of the Dr. Bleekers biography on the occasion of the inauguration of one of the buildings of the Utrecht University as the “Caroline Bleeker building”. Since then her name is present on her tomb stone to do justice to the merits of this very capable woman.

References.

Dr. Gijs van Ginkel, “*Dr. Caroline Emilie Bleeker en de Nederlandse Optiek- en Instrumentenfabriek Dr. C.E. Bleeker*” a biography on the occasion of the 100th anniversary of the birth of Dr. Bleeker. 300 pages with lots of illustrations and copies of historical documents.